EXHIBIT 26

RJ LeeGroup, Inc.

350 Hochberg Road
Monroeville, PA 15146
Tel: (724) 325-1776
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The Materials Characterization Specialists

October 25, 2001

Mr. Terry Smith
Program Manager
US Environmental Protection Agency
OERR/AOC
Ariel Rios Building
1200 Pennsylvania Ave., NW
Washington, DC 20460

RE: On-Site Audit Response
RJ Lee Group, San Leandro Laboratory

Dear Mr. Smith:

An on-site audit of RJ Lee Group's San Leandro laboratory was conducted on April 9 and 10, 2001 by the US EPA, IT Corporation, and the State of California. A report of findings (IT Corporation, May 1, 2001; US EPA cover letter, undated) was generated and submitted to RJ Lee Group. The following are responses to the itemized "Audit Observations"; a copy of the audit is attached to this letter.

Facilities

1. The San Leandro laboratory is a small facility where all visitors are immediately recognized as such by the staff. We have not seen a need to require visitors to wear a tag as suggested in your finding. We have accepted your suggestion for the visitor's logbook and have placed one on the desk at our entry.

2. The area will occasionally be left unattended while the employees perform other tasks. The sample log-in and report generation tasks are performed on computers that require passwords to access the databases.

Sample Receipt, Storage, and Tracking

3. All personnel were given additional instructions is the proper technique for completing a chain-of-custody (COC) form, including signing all pages of a multiple page COC. All COCs are now signed upon verification of sample IDs.

4. All personnel were given additional instructions in the correct procedure to use in completing our internal forms. Each form is to be completed; they are not to be ignored. Part of the review (prior to issuing the report) is to ensure the forms are completed.

5. The book is labeled as suggested in the observation.

6. At the time of the visit, unique laboratory numbers were generated for each sample. At log-in, the database prints two labels for each sample – one for the sample container and a second for the data sheet. These printed labels (which contain our job number and sample number, the client number, and other information) were simply placed in the project folder and then the folder and samples were delivered to the lab. This is not our correct procedure. The printed labels are supposed to be placed on each

sample and the project number placed on the outside of the bag containing all of the samples. All laboratory personnel have been given additional instructions on proper sample log-in.

7. Internal COC is documented by the database and written records that note who performed the log-in, analysis, and report generation.

8. The requirement for this action is found in our SOP 31 (GLP); not all personnel have complied with this requirement. We have given additional training to all personnel instructing them to cross out the error and to initial and date the change.

PLM

A cursory review of the observations in this section indicate the analyst was demonstrating techniques, not performing a correct analysis.

9. The use of a different refractive index fluid is a standard technique used to increase the visibility of the fibers of interest. Once the fibers are properly identified using appropriate liquids, a separate mount is made using an oil with a refractive index about 0.5 different than the matching liquid. When a sample contains multiple types of asbestos, the use of a different liquid is an automatic occurrence. While it may be accurate to indicate that this practice contributed to the observed differences between RJ Lee Group and Forensic Analytical, it would have been far more useful to investigate why Forensic Analytical had recognized differences in their PLM and TEM data and did not resolve these differences. Because the TEM data essentially validated RJ Lee Group's data, we do not believe that the practice identified in this observation led to incorrect analyses.

10. The issues identified in this observation relate to contamination of samples dues to techniques or environmental particulate. Laboratory blanks have shown, and continue to show, no contamination of the laboratory. From the stand point of the inspection, it was an unfortunate coincidence that personnel were stringing new computer cables in the laboratory during the inspection. Any debris generated by this activity should have been cleaned up by the technicians before leaving a room. All such debris has been cleaned up.

11. This is a serious issue and one which was corrected immediately. All analyses are QA'd at the 10% frequency prior to reporting the results to client.

12. As noted by the audit team ,this issue has been raised with the San Leandro analysts on other occasions. We are making a concerted effort to conduct these analyses every week as required by our QAPP and by NVLAP. Additional materials have been purchased to prepare permanent mounts of standards.

13. Actually, CARB 435 (and all other PLM methods) require that at least 8 slides be prepared when the asbestos is to be quantified by point count procedures. When visual estimates are made, 3 slides are prepared. The analyst was simply demonstrating procedures at the time of the visit.

14. This information is routinely recorded by the analysts except during a demonstration (as was the case during the inspection).

15. The point count form was recently (to the inspection date) sent to the laboratory. However, the analyst should have used that document for the demonstration.

16. Mr. Fink has been appointed as the section supervisor for the PLM optical laboratory. Part of his duties is to review all reports prior to issue of the final report to the client.

17. As noted in the Audit Observations, all maintenance activities are to be recorded in a logbook for each microscope. The laboratory has not been diligent enough in this activity. We are making a concerted effort to maintain these logs as mandated by our SOPs and by our various certifications.

18. This is similar to #8. The analysts have been given instructions on the proper technique for changing a notation on our data forms. All changes are to be crossed out, initialed and dated.

Quality Assurance/Quality Control (QA/QC)

19. There is no one person at the San Leandro laboratory who's sole designation is that of QA/QC officer. These duties are the responsibility of the corporate QA/QC officer located in Monroeville, PA. He is assisted by local personnel (such as Mr. Adam Fink for optical microscopy and Mr. Bernard Thomas for electron microscopy) in the day-to-day management of the QA/QC functions. A true and correct reading of the SOP 31 is that RJ Lee Group have a QA/QC officer and that the local laboratories may have a QA/QC person. The mandatory portion mentioned in the last sentence of the Observation is not in our SOP 31.

20. Training records are maintained at the corporate office. Each subfacility may, at their discretion, keep copies of the training files at their laboratory. Documents were faxed to the facility during the audit that documented the principal training of the analysts. These documents were not complete, but did show the analysts met the requirements established by all regulatory/certification authorities for the analysis of samples by polarized light microscopy. The observation incorrectly indicates our QAPP requires the training records be kept in the facility at which the analysts work – no such statement occurs in our QAPP. We do maintain all QA/QC records at one location in the laboratory, as mentioned in our SOP 31 – the location is our Monroeville office.

21. The minimum corporate requirement for all PLM analysts is that they have a high school education. We do not have a mandatory requirement that all analysts be degreed geologists. We require additional training for all personnel (typically a McCrone or McCrone-like course) prior to conducting analyses. To date, all PLM analysts at our California laboratory have had a college degree, generally geology or an earth science. That is not a requirement, merely a reflection of the local talent pool available in the California region.

22. This is a major problem identified by the audit team. We have conducted air sampling since the audit (October 17) at five locations around the laboratory and found no airborne asbestos. The responsibility for collecting the air samples has been assigned to Mr. Fink.

23. One official copy of the SOPs and QA plans are sent to San Leandro. Because it is such a small facility, we do not believe that additional official copies are required. However, we do permit each person to make a copy of the SOPs applicable to their area, copies they can use in the normal course of their work. To ensure that personnel are familiar with the SOPs, we are now requiring each analyst to read and sign/initial the SOPs applicable to their area.

24. We have written a new SOP (#79) to deal with analyses performed following the CARB 435 protocol.

25. We have had inconsistent responses to internal audit findings. We will put greater emphasis on these activities and strive for responses within 30 days of the internal audit.

Data Packages

26. The errors identified in this Observation are all related to limited technical oversight of the operation. We believe the appointment of Mr. Fink as a supervisor of the optical microscopy section with help to eliminate these problems.

Mr. Terry Smith
October 25, 2001

RJ Lee Group thanks the EPA for conducting this audit of our laboratory. We believe you have identified several key areas that required correction and that will improve our operation.

If you have any questions concerning this response, please feel free to call either Dr. Shiefelbein or myself.

Sincerely,

Drew R. Van Orden, PE
Manager, Quality Assurance

cc: B. Schiefelbein
C. E. Spangler

Attachments

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

Dr. Ben Schiefelbein
RJ Lee Group, Inc
Bay Area Laboratory
530 McCormick Place
San Leandro, CA 94577

Dear Dr Schiefelbein,

Enclosed for your records and review is a copy of the *Summary On-Site Audit Report RJ Lee Group, Inc.*. The report provides the audit finding information on your laboratory obtained during the April 9 and 10, 2001 on-site audit performed by Mr. Steve Remaley of the US Environmental Protection Agency, Region IX (on behalf of the Office of Emergency and Remedial Response (OERR), Analytical Operations and Data Quality Center (AOC) at the Washington D.C. Headquarters), the Quality Assurance Technical Support (QATS) contractor, and representatives from the State of California. The report addresses your laboratory's capabilities of analyzing asbestos samples according to established protocols. The audit report includes both technical and evidentiary results. The report includes laboratory information, audit observations, recommendations for corrective actions, conclusions, and a copy of the completed asbestos on-site labbratory audit checklist.

As no formal contract exists between this office and the RJ Lee Bay Area laboratory, a response to this audit report is not mandatory. However, I do encourage you to respond to this office in writing within forty-five days of receipt of this report, and to outline the corrective action measures you will be incorporating to address the audit observations. I have made the audit report available to the EPA regions and to the State of California, and failure to address the audit observations will undoubtedly make the Regions and the State of California hesitant to use the laboratory. You may send your response to the audit to the following address:

by Standard Mail:

US Environmental Protection Agency
OERR/AOC, mail code 5204G
Attn. Terry Smith
Ariel Rios Bldg.
1200 Pennsylvania Ave. N.W.
Washington D.C. 20460

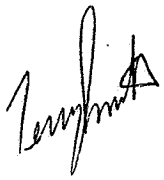
or by Express Mail:

US Environmental Protection Agency
OERR/AOC,
Attn. Terry Smith
1235 Jefferson Davis Highway
12th Floor, mail code 5204G
Arlington, VA 22202

If you have any questions concerning the audit or upcoming projects please do not hesitate to call me at (703) 603-8849.

We appreciate your hospitality during our visit, and I hope we have many opportunities to work together in the future.

Sincerely,



Terry Smith
Program Manager
US Environmental Protection Agency
OERR/AOC

REPORT

FOR

TASK ORDER 0011
ON-SITE AUDITS OF ASBESTOS LABORATORIES

SUMMARY ON-SITE AUDIT REPORT

RJ Lee Group, Inc.

Prepared by:

The Data Auditing Group
Quality Assurance Technical Support Laboratory
IT Corporation
2700 Chandler Avenue
Las Vegas, Nevada 89120

May 1, 2001

Contract Number: 68-W-01-010

Prepared for:

Terry Smith

Task Order Manager
Analytical Operations/Data Quality Center
U.S. Environmental Protection Agency
Washington, D.C. 20460

OFFICE OF EMERGENCY AND REMEDIAL RESPONSE
U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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LABORATORY INFORMATION

The purpose of this report is to summarize the findings of an on-site investigative audit of the asbestos laboratory, **RJ Lee Group, Inc.**, conducted on April 9-10, 2001. IT Corporation staff participation in the audit and subsequent preparation of this report was performed under Technical Direction 07, Task 01, of Task Order 0011.

Detailed information regarding the subject laboratory is as follows:

Date of On-site:	**April 9-10, 2001**
Laboratory:	**RJ Lee Group, Inc.** **Bay Area Laboratory** **530 McCormick Place** **San Leandro, CA 94577** **(510) 567-0488**
Senior Technical Sales Consultant:	**Ben Schiefelbein, Ph.D.**
Audit Team US EPA:	**Steve Remaley, Region 9**
State of California:	**Brad Parsons** **Lorna A. Garcia** **James Cheng**
IT Corporation:	**Michael Lenkauskas, CQA** **Lisa McKenna, REM, CHMM, CEA**

The audit team, comprised of USEPA Region 9, State of California, and IT Corporation personnel, collectively performed the technical and evidentiary aspects of the audit. The technical part of the audit involved evaluation of laboratory procedures associated with the preparation and analysis of bulk samples by Polarized Light Microscopy (PLM) for the identification of asbestos containing materials (ACMs). The evidentiary part of the audit involved evaluation of data packages, record keeping, Standard Operating Procedures (SOPs), and the laboratory Quality Assurance Manual (QAM). Evidentiary audit procedures as outlined in the EPA National Enforcement Investigations Center (NEIC) document, *EPA Regional CSF Completeness Evidence Audit Guidelines,* were followed. An asbestos checklist of method-specific requirements was prepared by IT Corporation prior to the audit, and was used during the on-site laboratory evaluation. A copy of the completed asbestos checklist is included as an attachment to this report.

PURPOSE OF AUDIT

The primary purpose of this non-routine audit was to investigate discrepancies between the PLM results reported by the RJ Lee Group, Inc. and those reported by the quality control laboratory, Forensic Analytical. Two sets of pulverized rock samples were received by the RJ Lee Group, Inc. from the Department of Toxic Substances Control (DTSC) and later forwarded to Forensic Analytical. Both laboratories prepared and analyzed the samples in accordance with the

California Air Resources Board (CARB) Method 435. However, the results reported by the two laboratories for several samples showed significant variance, including some that differed by nearly a factor of twenty (20).

AUDIT OBSERVATIONS

Facilities: The auditors evaluated the facility with regard to the procedures described in laboratory SOPs for safety, security and maintaining sample custody.

1. Upon entry into the facility, the auditors were neither required to sign in nor wear badges identifying them as "visitors."

2. During the course of the audit, the front reception area, with access to both the sample login and report generation areas, was sometimes left unlocked and unattended.

Sample Receipt, Storage, and Tracking: The auditors reviewed the appropriate SOPs and logbooks, and observed the designated sample custodian demonstrate the procedures for sample receipt, login, and storage. The auditors observed the work areas to be clean and orderly, and the staff proficient in the applicable procedures. However, several observations were noted with regard to record keeping, internal chain-of-custody, and sample identification:

3. Chain-of-Custody (COC) records are not always signed and dated upon receipt of samples at the laboratory. During the evaluation of the laboratory, the auditors observed a set of five COCs of which only one was signed and dated upon sample receipt.

4. The Project Verification and Login forms are not reviewed and signed prior to analysis or report generation. Numerous Project Verification and Login forms were observed throughout the laboratory and in previously submitted data packages that were neither signed nor dated, indicating that they had been reviewed.

5. The Sample Login laboratory logbook, which is used to login samples upon receipt at the laboratory, did not exhibit the title or activity on its cover. Also, columns were not labeled, and the initials of the individual performing the activity was not evident.

6. Laboratory sample identification numbers are not assigned and attached to the individual sample containers. A project number is assigned which is attached to the bag containing the individual samples. Because field (client) sample identification numbers can be identical for different projects and/or clients, misidentification of samples can occur unless unique laboratory sample identification numbers are assigned.

7. Internal sample COC is not documented. After login, samples are transferred to the appropriate areas for preparation and/or analyses. Neither this initial transfer nor subsequent transfers for additional analyses or final disposition are documented.

8. Corrections and/or obliterations to sample receipt documents and raw data are not always signed and/or dated by the individual who made the correction.

PLM: The auditors reviewed the appropriate SOPs and logbooks, and observed an analyst prepare and analyze bulk samples for ACMs in accordance with the CARB Method 435. As part

of the evaluation for PLM capabilities, the auditors requested that the laboratory obtain some previously-analyzed samples from the QC laboratory for reanalysis. During the demonstration, several observations were noted with regard to method requirements, SOPs, sample handling, record keeping, and general good laboratory practice (GLP).

9. In performing the reanalysis of the samples that were the primary focus of the audit, the auditors observed that a different refractive index solution was used for point counting versus identification. There is no reference in the method that precludes this practice. However, the auditors believe it could be the primary reason the DTSC samples analyzed by RJ Lee and Forensic Analytical differ in results by such a wide margin.

10. The auditors observed several slide mount preparation practices which could result in asbestos cross-contamination and/or misidentification in bulk samples. The following observations were noted during a demonstration of the slide mount preparation procedure:

- The dropper used to apply the refractive index liquid to the slide was allowed to contact the slide and then returned to the refractive index liquid container.
- The edge of the slide was used to manipulate the bulk sample.
- Work surface areas were only dry wiped prior to and in between the preparation of different samples.
- As a result of facility maintenance activities, debris from ceiling tiles were observed in the work area.

11. Duplicate analyses are not performed at the method-required frequency, and are not performed at the same time the original samples are analyzed. Duplicate analyses are typically assigned at the end of a work week by selecting a number of samples equal to ten percent (10%) of the total number of samples prepared and analyzed during the week. Samples selected for duplicate analyses are usually different from the original samples that had been analyzed during the week. Also, duplicate analyses are sometimes not performed until a month after the original analyses.

12. Referenced slides are not analyzed weekly as described in Section 11.4 of the PLM QAPP. The analyst indicated to the audit team that the reference slides are only used during training of newly hired analysts. This same observation was documented by the Corporate Quality Assurance Officer (QAO) during an internal audit conducted on 05/25/99.

13. The analyst only prepares and analyzes two (2) slide mounts for each sample. The requirement that a minimum of three (3) slide mounts be prepared and analyzed for each sample is described in Section 2.2.5.2.2, Page 17, EPA Method 600/R/93/116.

14. During both the stereomicroscopic and PLM analyses, the analysts did not record the following observations as described in SOP 31 and Section 8.1 of the PLM QAPP:

- Homogeneity
- Morphology
- Color
- Pleochroism
- Indices of refraction

- Birefringence
- Extinction characteristics
- Sign of elongation

15. During the point counting procedure by the CARB Method 435, the analysts improperly recorded the results on the PLM bench sheet, and not on the available point count bench sheet.

16. Raw data and reports are not supervisory reviewed as described in Section 13.3 of the PLM QAPP. Reports and raw data are sometimes peer reviewed. However, usually the analysts review their own results after data entry, and then personally submit the results to the client by facsimile and/or carrier.

17. The PLM maintenance logbooks do not include documentation of either routine maintenance or cleaning of the PLM instruments. The requirement that all maintenance be recorded for laboratory instrumentation is described in SOP-31 (GLP).

18. Corrections and/or obliterations to PLM documents and raw data are not always signed and/or dated by the individual who made the correction.

Quality Assurance/Quality Control (QA/QC):

19. The laboratory does not have a designated Quality Control Officer (QAO) on-site. All QA/QC functions are currently performed by a regional QAO located at the corporate office in Monoreville, Pennsylvania who visits the facility semi-annually to perform internal audits. The requirement for the laboratory facility to have a Quality Control Unit responsible for managing the QA program is described in SOP 31.

20. The complete training records for the laboratory personnel involved in the handling, preparation, analyses, and reporting of possible ACMs were not available to the auditors during the laboratory investigation. The training records for all employees and all QA/QC records are maintained by the QAO at the corporate office, and although partial training and QC/QC records were submitted to the auditors by facsimile upon request, the records were incomplete. The requirement that training records for employees be maintained at the facility in which they work is described in Section 4.1 of the PLM QAPP. Also, Section VII of SOP 31 states, "all records kept by the QA unit shall be kept in one location at the laboratory."

21. Laboratory management stated to the audit team that all microscopists are required to have a formal/advanced education in a related field. However, no such training records were provided to the audit team confirming the analysts' credentials. Also, Section 3.3.1 of the PLM QAPP states that no formal education beyond the high school level is required.

22. Although a requirement that air monitoring be performed semi-annually or quarterly is described in the Air Sampling/Monitoring SOP (SOP-13), air monitoring has not been conducted in the facility since September 1999.

23. The applicable SOPs are not available in the areas where the procedures are performed, and no record of acknowledgment indicating that laboratory personnel had read the applicable SOPs is available.

24. Although samples are accepted and analyzed according to the CARB Method 435, an SOP for analyzing samples in accordance with this method has not been developed.

25. Although internal audits have been performed by the QAO semi-annually, laboratory responses and/or corrective actions in response to previous internal audit findings were not available.

Data Packages: The auditors reviewed data packages AOC007285, AOC009244-PC-2, AOC010438-PC, AOC102194, AOC010560-PC-2, AOC010560-PC, and AOC0100560-PC-1 for technical, methodological, and evidentiary discrepancies.

26. The following deficiencies were observed:

- The report cover letters for reports AOC009244-PC-2, AOC010438-PC, AOC010560-PC-2, AOC010560-PC, and AOC0100560-PC-1 incorrectly referenced the EPA Interim Method for the Determination of Asbestos in Bulk Insulation Samples (40 CFR, Pt. 763, Subpart F, App. A). The correct reference is the CARB Method 435.
- The dates of analysis reported on the asbestos reports consistently fail to match those reported in the raw data.
- The optical properties and/or refractive index liquids applied are often not recorded on the analytical bench sheets.
- Laboratory sample identification labels are not properly affixed to laboratory documents.
- Corrections and/or obliterations to documents and raw data are not always signed and/or dated by the individual who made the correction.
- There is no documentation to support whether QC analyses are performed at the correct frequency for all reported sample results.
- Laboratory bench sheets are often incomplete, with dates, descriptions, etc. omitted.
- Unused sections of documentation are not properly lined-out, initialed, and dated.

RECOMMENDATIONS FOR CORRECTIVE ACTION

Facilities

1. Ensure that all visitors are required to sign in upon entering the facility.

2. Ensure that all entrances into the facility remain locked when unattended.

Sample Receipt, Storage, and Tracking

3. Ensure that COC records are signed and dated upon sample receipt at the laboratory.

4. Ensure that the Project Verification and Login forms are properly reviewed, signed, and dated prior to the initiation of sample analyses.

5. Ensure that the Sample Login laboratory logbook properly exhibits the title on the cover, labeled columns, and the initials of the individual performing the activity.

6. Ensure that laboratory sample identification numbers are assigned to individual samples, and are affixed by label to each sample container.

7. Ensure that internal COC procedures include documentation that clearly demonstrates sample custody is maintained from receiving through retention or disposal.

8. Ensure that corrections to sample receipt documents and raw data are made by drawing a single line through the errors and entering the correct information. Do not obliterate or render unreadable. Ensure that corrections and additions are signed (or initialed) and dated by the individual responsible for the correction.

PLM

9. Because there is no reference in the method that precludes the use of different refractive index solutions for the identification and point counting procedures, further investigation is necessary before a recommendation for corrective action can be made.

10. To prevent cross contamination, do not allow the refractive index liquid dropper to contact the slides; do not use the slide to manipulate samples; properly clean the work surface prior to and in between contact with different samples; and ensure that the work area remains clear of debris at all times.

11. Ensure that duplicate analyses are performed at a frequency of ten percent (one per every ten samples), and that the duplicate analyses are performed at the same time of the associated sample batch.

12. Ensure that referenced slides are analyzed weekly as described in Section 11.4 of the PLM QAPP.

13. Ensure that a minimum of three (3) slide mounts are prepared and analyzed for each sample as described in Section 2.2.5.2.2, Page 17, EPA Method 600/R/93/116.

14. Ensure that the following observations are recorded for both the stereomicroscopic and PLM analyses, as described in SOP 31 and Section 8.1 of the PLM QAPP:

    - Homogeneity
    - Morphology
    - Color
    - Pleochroism
    - Indices of refraction
    - Birefringence
    - Extinction characteristics
    - Sign of elongation

15. Ensure that the proper documentation is completed for point counting procedures.

16. Ensure that all reports and raw data are supervisory reviewed prior to being submitted, as described in Section 13.3 of the PLM QAPP.

17. Ensure that all routine maintenance and cleaning activities are recorded in the PLM maintenance logbooks as described in SOP-31 (GLP).

18. Ensure that corrections to PLM documents and raw data are made by drawing a single line through the errors and entering the correct information. Do not obliterate or render unreadable. Ensure that corrections and additions are signed (or initialed) and dated by the individual responsible for the correction.

QA/QC

19. Assign or designate an on-site QAO to provide day-to-day QA/QC oversight of laboratory activities.

20. Ensure that complete training and QA/QC records are maintained at the laboratory as described in Section 4.1 of the PLM QAPP and Section VII of SOP 31.

21. Revise the PLM QAPP to reflect the minimum training requirements for microscopists.

22. Ensure that air monitoring activities are performed at least semi-annually as described in the Air Sampling/Monitoring SOP (SOP-13).

23. Ensure that the applicable SOPs and the QAM are available to the analysts in the areas where the work is performed.

24. Develop an SOP for the CARB Method 435.

25. Ensure that all corrective actions are properly documented.

Data Packages

26. For all data packages, ensure that:

- The correct method is referenced in the cover letter.
- The dates of analysis reported in the data package matches those in the raw data.
- The optical properties observed and refractive index liquids used are properly recorded.
- The information inserted into laboratory documents is affixed permanently in place by signing and dating across the insert and the page at the time the information is inserted.
- Corrections to laboratory documents and raw data are made by drawing a single line through the errors and entering the correct information, and that corrections and additions are signed (or initialed) and dated by the individual responsible for the correction.
- Documentation is provided that supports QC analyses were performed at the correct frequency for the reported sample results.
- All laboratory documents are properly completed.
- All unused sections of laboratory documents are properly lined-out, initialed, and dated.

CONCLUSIONS

The overall evaluation of the laboratory revealed procedural weaknesses with regard to a lack of an on-site QA/QC program, compliance with laboratory SOPs and methodology, sample handling, record keeping, and incomplete documentation of analytical results.

The most significant observations from evaluation of the laboratory are as follows:

- The use of a different refractive index solutions for identification and point counting may be a contributing factor in the discrepancies in sample results from RJ Lee Group, Inc. versus those from another laboratory. The method is unclear as to whether or not this is an acceptable practice and only states that the samples be mounted "with the appropriate refractive index liquid" for the point counting procedure. Note that this observation has not yet been verified through analysis from a third source.

- Significant evidentiary concerns included failure to sign COC records upon receipt, lack of internal COC documentation, and lack of procedures for assigning internal laboratory sample identification numbers to individual sample containers.

- Significant technical findings include failure to record key observations during stereomicroscopic and PLM analyses, failure to perform duplicate analysis at the prescribed frequency, failure to routinely utilize reference slides, and failure to perform several procedures to minimize potential cross-contamination.

- Significant QA/QC and reporting concerns include the lack of an on-site Quality Assurance Officer, and incomplete documentation of analytical results.

The majority of the staff were very cooperative, and readily answered all questions posed by the on-site audit team. The management of the laboratory was responsive to the identified observations, and appeared to be dedicated to correcting all of the audit observations.

ATTACHMENT

ASBESTOS ON-SITE LABORATORY EVALUATION FORM

USEPA

Date of On-site: April 9-10, 2001

Laboratory: RJ Lee Group, Inc.

Address: 530 McCormick Street

San Leandro, CA 94577

Telephone: (510) 567-0480

Laboratory Personnel Contacted

Name	Title
Ben Schiefelbein, Ph.D.	Senior Technical Sales Consultant
Stephen S. Yata	Senior Geologist

Evaluation Team

Name	Title
Steve Remaley	USEPA, Region 9
Michael Lenkauskas, CQA	IT Corp., Lead Auditor
Lisa McKenna, REM, CHMM, CEA	IT Corp., Senior Technical Consultant
Brad Parsons	State of California, Senior Hazardous Substances Specialist
Lorna A. Garcia	State of California, Public Health Chemist
James Cheng	State of California, Public Health Chemist

ASBESTOS ON-SITE LABORATORY EVALUATION FORM

USEPA

Date of On-site: April 9-10, 2001

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ASBESTOS ON-SITE LABORATORY EVALUATION FORM

USEPA

Date of On-site: April 9-10, 2001

1.0 SECURITY OF FACILITY	Yes	No	Comments
1.1 Are visitors required to:			
1.1.1 Sign in?	—	✓	
1.1.2 Display distinct badges?	—	✓	
1.2 Are all entrances to the facility locked, except the entrance to the reception area?	✓	—	
2.0 LABORATORY CERTIFICATIONS AND GENERAL CAPABILITIES			
2.1 Is the laboratory accredited for asbestos analysis under the National Voluntary Laboratory Accreditation Program (NVLAP)?	✓	—	
Accreditation Number: 101208-2 Date: Exp. 06/30/01			
2.2 Is the laboratory accredited for asbestos analysis under the American Industrial Hygiene Association (AIHA), and does it participate in the NIOSH Proficiency Analytical Testing (PAT) Program?	✓	—	
Accreditation Number: 429 Date: Exp. 07/01/02			
2.3 Does the laboratory possess other certifications?	✓	—	Others: State of California Department of Health.
Program: See Comments Date:			
2.4 What type of asbestos containing materials (ACMs) does the laboratory receive for analyses:			
2.4.1 Bulk samples?	✓	—	
2.4.2 Air samples?	—	—	Not audited.
2.4.3 Other? (List)	—	—	Not audited.

Additional comments:

ASBESTOS ON-SITE LABORATORY EVALUATION FORM

USEPA

Date of On-site: April 9-10, 2001

2.0 LABORATORY CERTIFICATIONS AND GENERAL CAPABILITIES (continued)	Yes	No	Comments
2.5 What general instrumentation is available to the laboratory for asbestos analysis:			
2.5.1 Stereomicroscopic?	✓	—	
2.5.2 Polarized Light Microscopy (PLM)?	✓	—	
2.5.3 Transmission Electron Microscopy (TEM)?	—	—	Not audited.
2.5.4 Phase Contrast Microscopy (PCM)?	—	—	Not audited.
2.5.5 X-Ray Diffraction (XRD)?	—	—	Not audited.
2.5.6 Scanning Electron Microscopy (SEM)?	—	—	Not audited.
2.5.7 Other? (List)	—	—	Not audited.
2.6 Which of the following methods are routinely used by the laboratory asbestos determination:			
2.6.1 Superfund Method for the Determination of Releasable Asbestos in Soils and Bulk Materials (EPA/540/R/97/028)?	—	—	Not audited.
2.6.2 Asbestos and Other Fibers by PCM (NIOSH Method 7400)?	—	—	Not audited.
2.6.3 Asbestos by TEM (NIOSH Method 7402)?	—	—	Not audited.
2.6.4 Asbestos, Chrysotile by XRD (NIOSH Method 9000)?	—	—	Not audited.
2.6.5 Asbestos (Bulk) by PLM (NIOSH Method 9002)?	✓	—	
2.6.6 Test Methods for the Determination of Asbestos in Bulk Building Materials (EPA/600/R/93/116)?	✓	—	
2.6.7 AHERA Air Method (40CFR, Part 763, Subpart E)?	✓	—	
2.6.8 Other? (Describe)	✓	—	California CARB 435.
2.7 What types of asbestos fibers can the laboratory identify:			
2.7.1 Chrysotile Asbestos?	✓	—	
2.7.2 Amosite Asbestos?	✓	—	
2.7.3 Crocidolite Asbestos?	✓	—	
2.7.4 Tremolite Asbestos?	✓	—	
2.7.5 Actinolite Asbestos?	✓	—	
2.7.6 Anthophyllite Asbestos?	✓	—	
2.7.7 Other?(List)	—	✓	
3.0 SAMPLE RECEIVING AND STORAGE			
3.1 Sample Receiving:			
3.1.1 Is the sample receiving area adequate, clean, and orderly ?	✓	—	
Additional comments:			

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3.0 SAMPLE RECEIVING AND STORAGE (continued)	Yes	No	Comments
3.1 Sample Receiving (continued):			
3.1.2 Is there a sample custodian and designated alternate (in case of custodian's absence) responsible for sample receipt and log-in?	✓	—	
Custodian's name: Scosha Brewer			
Alternate's name: Michelle Edward			
3.1.3 Is the custodian or alternate available to receive and log in samples at any time overnight delivery services are operating?	✓	—	
3.1.4 Is the sample receiving area secured against unauthorized personnel?	—	✓	
3.1.5 Are sample receiving SOPs readily available to the sample custodian?	—	✓	
3.1.6 Does the sample custodian or alternate follow the SOPs?	✓	—	
3.1.7 Are sample shipping containers opened in a HEPA hood to prevent possible laboratory contamination?	✓	—	
3.1.8 Are sample receiving documents acceptable?	✓	—	
3.1.9 Does the sample custodian verify and record the following information on the sample receiving documentation:			
3.1.9.1 Presence and condition of custody seals?	✓	—	
3.1.9.2 Custody seal numbers?	—	—	Not applicable.
3.1.9.3 Presence or absence of chain-of-custody records?	✓	—	
3.1.9.4 Presence or absence of airbill sticker(s)?	—	—	Not applicable.
3.1.9.5 Sample condition?	✓	—	
3.1.9.6 Presence or absence of vermiculite packing material?	—	✓	
3.1.9.7 Presence or absence of polystyrene packing material?	—	✓	
3.1.9.8 Presence or absence of sample tags?	—	—	Not applicable.
3.1.9.9 Problems/discrepancies between COC records, sample tags, airbills, client requests, etc?	✓	—	
3.1.9.10 Bulk and air samples received separately?	—	✓	
3.1.10 Are Chain-of-Custody (COC) records signed and dated at the time of sample receipt?	—	✓	
3.1.11 Is a system in place to contact the client in case of absent documentation, or discrepancies between COCs, sample tags, client requests, etc?	✓	—	
3.1.12 Are subsequent resolutions to problems and discrepancies documented?	✓	—	

Additional comments:

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3.0 SAMPLE RECEIVING AND STORAGE (continued)	Yes	No	Comments
3.2 Storage of Asbestos Samples:			
3.2.1 Are storage facilities sufficient?	✓	—	
3.2.2 Is there sufficient refrigeration space for soil samples? (Refrigeration of soil samples is required by the Superfund Method)	—	—	Not audited.
3.2.3 Are sample containers wiped clean within a HEPA hood prior to storage?	—	✓	
3.2.4 Is the sample storage area secured to prevent entry of unauthorized personnel?	—	✓	
3.2.5 Does the laboratory maintain a list of authorized personnel having access to secured storage areas?	✓	—	
3.2.6 Are sample storage SOPs readily available to the sample custodian?	—	✓	
3.2.7 Does the sample custodian or alternate follow the SOPs?	✓	—	
3.2.8 Does the sample custodian keep storage logbooks for prepared samples?	—	—	Not audited.
3.2.9 Are logbooks acceptable for prepared samples?	—	—	Not audited.
3.2.10 Are prepared samples easy to locate from logbook references?	—	—	Not audited.
4.0 SAMPLE IDENTIFICATION			
4.1 Are sample identification SOPs readily available?	—	✓	
4.2 Does the sample custodian or alternate follow the SOPs?	✓	—	
4.3 Are sample receipt and identification logbooks or a LIMS used to log in samples and assign unique laboratory identification numbers?	✓	—	
4.4 Does the laboratory have a system (LIMS) for generating unique laboratory ID numbers for each sample?	✓	—	
4.5 Does the system clearly apply to samples and prepared samples, etc?	✓	—	

Additional comments:

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4.0 SAMPLE IDENTIFICATION (continued)	Yes	No	Comments
4.6 Are laboratory ID numbers assigned and attached to samples immediately upon receipt?	—	✓	
If not, when? See additional comments below.			
4.7 Are the sample identification logbook(s) or system acceptable?	✓	—	
4.8 Does the logbook or logging system serve as a direct cross-reference between laboratory ID numbers and client ID numbers?	✓	—	
5.0 SAMPLE TRACKING			
5.1 Is a system in place to keep track of samples and prepared samples entering and leaving the storage, sample preparation, and analysis areas?	—	✓	
5.2 Are sample tracking and document control SOPs readily available?	—	✓	
5.3 Do all laboratory personnel follow the SOPs?	—	—	Not applicable.
5.4 Are all activities performed on samples recorded (e.g., sample receipt, sample transfer, sample preparation, sample analysis, sample splitting, etc)?	—	✓	
5.5 When samples are split in the laboratory, is there a method in place to assign laboratory numbers to track the sample back to the original sample?	—	—	Not audited.
5.6 Is the retention and/or disposal of unused portions of samples and prepared samples documented?	—	—	Not audited.
5.7 Are sample tracking documents acceptable?	—	—	Not audited.
6.0 SAMPLE PREPARATION			
6.1 General Facilities:			
6.1.1 Is the laboratory clean and organized?	✓	—	
6.1.2 Does the laboratory appear to have adequate work space?	✓	—	
6.1.3 Are laboratory bench tops and cabinets constructed of suitable chemical-resistant materials?	✓	—	
6.1.4 Are there a sufficient number of functional hoods and/or glove boxes with HEPA filters?	✓	—	

Additional comments:

Samples received in the evenings or on the weekends are often not logged in until the following business day.

NOTE: When touring the laboratory, pay special attention to (a) the overall organization and neatness of the facilities, (b) the proper maintenance of facilities and instrumentation and (c) the general adequacy of the facilities to accomplish the required work.

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6.0 SAMPLE PREPARATION (continued)	Yes	No	Comments
6.2 Contaminant Control:			
6.2.1 Are dust and fiber free work areas provided for sample preparation and analysis?	✔	—	
6.2.2 Are bulk and air filter samples prepared in separate areas?	✔	—	
6.2.3 Are exhaust hoods or glove boxes with HEPA filters provided to allow contamination-free work with ACM?	✔	—	
6.2.4 Are surface wipe tests and air analyses performed and documented in the work areas?	✔	—	
6.2.5 Are all tools (tweezers, etc.) cleaned prior to use and between handling of different samples?	✔	—	
6.2.6 Are records of background analyses maintained?	✔	—	
6.2.7 Are corrective action procedures in place in the event of contamination?	—	✔	
6.3 Analytical Balances:			
6.3.1 Are analytical balances located away from drafts and areas subjected to rapid temperature changes?	—	—	Not audited.
6.3.2 Are balances checked routinely (e.g., daily, or before each weighing session) with appropriate standard weights and recorded in a permanent logbook?	—	—	Not audited.
6.3.3 Have the balances been calibrated within the last 12 months by a certified technician?	—	—	Not audited.
6.3.4 Are SOPs readily available for balance calibration, preventive maintenance, and corrective action procedures?	—	—	Not audited.
6.3.5 Do all laboratory personnel follow the SOPs?	—	—	Not audited.

Additional comments:

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6.0 SAMPLE PREPARATION (continued)	Yes	No	Comments
6.4 Reagents:			
6.4.1 Are analytical reagents dated upon receipt and used on a first-in, first-out basis?	✔	—	
6.4.2 Are solvent storage cabinets vented or otherwise located away from possible laboratory contamination?	✔	—	
6.4.3 Are documented fiber free water and solvents available for the preparation of field samples and blanks?	—	—	Not audited.
6.4.4 Is the purity of water and solvents verified by blank analyses before use?	—	—	Not audited.
6.4.5 Are blank data acceptable?	—	—	Not audited.
6.4.6 Are there written SOPs for water and solvent purity check readily available?	—	—	Not audited.
6.4.7 Do laboratory personnel follow the SOPs?	—	—	Not audited.
6.5 Bulk Sample Preparation for TEM Analysis:			
6.5.1 Which of the following methods are used by the laboratory for Bulk sample preparation for TEM:			
6.5.1.1 EPA/540/R/97/028?	—	—	Not audited.
6.5.1.2 EPA/600/R/93/116?	—	—	Not audited.
6.5.1.3 Other? (explain)	—	—	Not audited.
6.5.2 If moisture is observed, are samples dried prior to sample preparation?	—	—	Not audited.
6.5.3 Is particle size reduced prior to sample preparation?	—	—	Not audited.
6.5.4 Are crucibles and filters pre-weighed prior to being used?	—	—	Not audited.
6.5.5 Is the initial volume of sample between 1 and 5 grams?	—	—	Not audited.

Additional comments:

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6.0 SAMPLE PREPARATION (continued)	Yes	No	Comments
6.5 Bulk Sample Preparation for TEM Analysis (continued):			
6.5.6 Are samples ashed in an oven prior to acid washing?	__	__	Not audited.
6.5.6.1 If yes, at what temperature and for how long? Temperature:_____Time:____s			
6.5.7 Is an acid dissolution procedure performed?	__	__	Not audited.
6.5.8 Are samples filtered using pre-weighed filters and allowed to dry?	__	__	Not audited.
6.5.9 Is PLM analysis performed on the residual material prior to TEM analysis?	__	__	Not audited.
6.5.10 Is a small portion of the residual material dispersed in ethanol, acetone, or isopropyl alcohol in an ultrasonic bath?	__	__	Not audited.
6.5.11 Is approximately 3 μL of this suspension pipetted from the vial, while still in the ultrasonic bath, onto a TEM grid and allowed to dry?	__	__	Not audited.
6.5.12 Are TEM grids properly stored in a dust free environment prior to analysis?	__	__	Not audited.
6.5.13 Are written SOPs available for the preparation of bulk samples for TEM analysis?	__	__	Not audited.
6.5.14 Do laboratory personnel follow the SOPs?	__	__	Not audited.
6.6 Soil Sample Preparation for TEM Analysis:			
6.6.1 Which of the following methods are used by the laboratory for soil sample preparation for TEM:			
6.6.1.1 EPA/540/R/97/028?	__	__	Not audited.
6.6.1.2 Other? (explain)_____	__	__	Not audited.

Additional comments:

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6.0 SAMPLE PREPARATION (continued)	Yes	No	Comments
6.5 Soil Sample Preparation for TEM Analysis (continued):			
6.6.2 Does the laboratory use one of the following techniques to dry samples prior to dust generation:			
6.6.2.1 Desiccator using potassium carbonate dehydrate, or equivalent?	—	—	Not audited.
6.6.2.2 Drying oven maintained at a temperature at or below 60°C?	—	—	Not audited.
6.6.3 Are written SOPs for sample drying readily available?	—	—	Not audited.
6.6.4 Do laboratory personnel follow the SOPs?	—	—	Not audited.
6.6.5 Are all samples weighed on an appropriate balance and are weights recorded?	—	—	Not audited.
6.6.6 Are the soil samples, if not processed in the field, passed through a wire mesh sieve with 3/8 inch (1 cm) openings and collected in an appropriate container for particle size reduction?	—	—	Not audited.
6.6.6.1 Is the material passing through the sieve (fine fraction) and material retained by the sieve (coarse fraction) stored and weighed separately?	—	—	Not audited.
6.6.6.2 Is the coarse fraction disposed of appropriately?	—	—	Not audited.
6.6.6.3 Are soil samples prepared within 48 hours?	—	—	Not audited.
6.6.7 Are written SOPs readily available for particle size reduction?	—	—	Not audited.
6.6.8 Do laboratory personnel follow the SOPs?	—	—	Not audited.
6.6.9 Homogenization and/or splitting:			
6.6.9.1 Are the samples homogenized and/or split using a riffle splitter?	—	—	Not audited.
6.6.9.1.1 Is the riffle splitter used in accordance with the Superfund method? (3/4 to 1 inch chutes and large enough to process a 1 Kg sample)	—	—	Not audited.
6.6.9.1.2 Is the riffle splitter appropriately cleaned between processing each sample?	—	—	Not audited.

Additional comments:

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6.0 SAMPLE PREPARATION (continued)	Yes	No	Comments
6.6 Soil Sample Preparation for TEM Analysis (continued):			
6.6.9.2 Are the samples homogenized and/or split using the mixing with coning and quartering technique?	—	—	Not audited.
6.6.9.2.1 Does the mixer in use meet the Superfund method requirements? (i.e. large enough to process a 1 Kg sample)	—	—	Not audited.
6.6.9.2.2 Is the mixer used in accordance with the manufacturer's specifications?	—	—	Not audited.
6.6.9.2.3 Is the mixer and associated equipment appropriately cleaned between processing each sample?	—	—	Not audited.
6.6.9.3 Are the samples homogenized and/or split using an alternative technique? (Describe technique)	—	—	Not audited.
6.6.9.4 Are written SOPs readily available for sample homogenization?	—	—	Not audited.
6.6.9.4.1 Do laboratory personnel follow the SOPs?	—	—	Not audited.
6.6.9.5 Are the samples subject to a compositing technique? (Describe technique)	—	—	Not audited.
6.6.9.5.1 Are the samples to be composited weighed and sieved prior to compositing?	—	—	Not audited.
6.6.9.5.2 Are the fine fractions of each sample weighed and recorded prior to compositing?	—	—	Not audited.
6.6.9.5.3 Are the coarse fractions of each sample weighed and recorded prior to disposal?	—	—	Not audited.
6.6.9.5.4 Is the composite sample given a new sample number and is the composition traceable to the individual samples used to make the composite sample?	—	—	Not audited.
6.6.10 Are written SOPs readily available for compositing?	—	—	Not audited.
6.6.11 Do laboratory personnel follow the SOPs?	—	—	Not audited.

Additional comments:

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6.0 SAMPLE PREPARATION (continued)	Yes	No	Comments
6.6 Soil Sample Preparation for TEM Analysis (continued):			
6.6.12 Dust Generation of Asbestos Soil Samples:			
6.6.12.1 Does the dust generator have the following specifications:			
6.6.12.1.1 129 horsepower DC motor, or equivalent?	—	—	Not audited.
6.6.12.1.2 The vacuum pumps are capable of pulling how many LPM?	—	—	Not audited.
6.6.12.1.3 Heating mantle?	—	—	Not audited.
6.6.12.1.4 Immersion pump and cooler of sufficient capacity to provide 0°C at a flow rate of 1 to 2 liters/minute?	—	—	Not audited.
6.6.13 Are the dust generator filters conditioned prior to dust generation?	—	—	Not audited.
6.6.14 Are pre-conditioned filters pre-weighed and stored accordingly?	—	—	Not audited.
6.6.15 Are the appropriate filters used? (EPA Method 540-R-97-028 specifies a filter a 0.45μm pore size and 25 mm diameter)	—	—	Not audited.
6.6.16 Are the flow rates of the dust generator adjusted and recorded prior to use?	—	—	Not audited.
6.6.17 Are written SOPs readily available for dust generation?	—	—	Not audited.
6.6.18 Do laboratory personnel follow the SOPs?	—	—	Not audited.
6.6.19 Does the laboratory prepare TEM analysis specimen grids from 100% of the soil samples?	—	—	Not audited.
6.6.20 Does the laboratory prepare serially diluted aliquots of the scrubber suspensions for TEM screening analysis to determine and select the optimally loaded specimen for detailed analysis by TEM?	—	—	Not audited.
6.6.21 Does the laboratory prepare TEM analysis specimen grids for a minimum subset of 5% of the samples from the filters collected over the IST opening of the vertical elutriator using the direct transfer technique?	—	—	Not audited.
6.6.22 Does the laboratory use the optional indirect transfer technique for specimen grid preparation of filters collected over the IST opening of the vertical elutriator?	—	—	Not audited.
6.6.23 Does the laboratory prepare laboratory blanks using the direct transfer technique to demonstrate that the room in which samples are handled and prepared is free from asbestos contamination?	—	—	Not audited.

Additional comments:

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6.0 SAMPLE PREPARATION (continued)	Yes	No	Comments
6.6 Soil Sample Preparation for TEM Analysis (continued):			
6.6.24 Quality Control:			
6.6.24.1 Does the laboratory process and analyze blanks from the beginning of each run of the dust generator?	—	—	Not applicable.
6.6.24.2 Does the laboratory collect, prepare, and analyze equipment blanks from the beginning of each run of the dust generator?	—	—	Not applicable.
6.6.24.3 Does the laboratory collect, prepare, and analyze a run blank at the beginning of each run of the dust generator?	—	—	Not applicable.
6.6.24.4 Does the laboratory collect, prepare, and analyze a scrubber blank after the scrubber is loaded prior to the heating of the scrubber?	—	—	Not applicable.
6.6.24.5 Does the laboratory collect, prepare, and analyze modified run and scrubber blanks and/or post-run scrubber blanks?	—	—	Not applicable.
6.7 Filter Sample Preparation for TEM Analysis:			
6.7.1 Which of the following methods are used by the laboratory for filter sample preparation for TEM:			
6.7.1.1 NIOSH 7402?	—	—	Not audited.
6.7.1.2 40CFR, PART 763, SUBPART E, APPENDIX A?	—	—	Not audited.
6.7.1.3 Other? (explain)	—	—	Not audited.
6.7.2 Are sample containers wiped clean prior to transfer to the preparation area?	—	—	Not audited.
6.7.3 Before preparation of filters, are glass slides, which are used to support strips of filter during evaporation, cleaned and dried?	—	—	Not audited.
6.7.4 Are filter strips cut using a surgical steel knife with a curved blade?	—	—	Not audited.
6.7.5 Are all slides labeled with sample identification numbers?	—	—	Not audited.
6.7.6 Are filters collapsed (cleared) by the "hot block" or similar technique? (Describe technique)	—	—	Not audited.

Additional comments:

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6.0 SAMPLE PREPARATION (continued)	Yes	No	Comments
6.7 Filter Sample Preparation for TEM Analysis (continued):			
6.7.7 Is plasma etching performed on collapsed filters?	—	—	Not audited.
6.7.7.1 Is a 10% layer of the collapsed surface removed during etching?	—	—	Not audited.
6.7.8 Once the filters have been collapsed, are samples transferred to a vacuum evaporator for application of a 1 x 5 mm section of graphite rod?	—	—	Not audited.
6.7.9 Are filters cleared in a Jaffe washer?	—	—	Not audited.
6.7.9.1 How long do samples remain in the Jaffe washer?			
6.7.10 Are samples checked for remaining filter residue after clearing?	—	—	Not audited.
6.7.10.1 If residue remains, is a condensation washing technique used? (Describe technique)	—	—	Not audited.
6.7.11 Are prepared samples stored in a fiber/dust free environment to await analysis?	—	—	Not audited.
6.7.12 Quality Control:			
6.7.12.1 Are laboratory blanks prepared at a frequency of 10%?	—	—	Not audited.
6.7.12.2 Are plasma etch blanks prepared at a frequency of 5%?	—	—	Not audited.
6.7.12.3 Are a minimum of three preparations performed for each field sample and blank?	—	—	Not audited.
6.7.12.4 Are written SOPs available for filter sample preparation for TEM analysis?	—	—	Not audited.
6.7.12.5 Do laboratory personnel follow the SOPs?	—	—	Not audited.

Additional comments:

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6.0 SAMPLE PREPARATION (continued)	Yes	No	Comments
6.8 Preparation for Bulk Samples for PLM Analysis:			
6.8.1 Which of the following methods are used by the laboratory for friable bulk sample preparation for PLM:			
6.8.1.1 NIOSH 9002?	✓	—	
6.8.1.2 40CFR, PART 763, SUBPART E, APPENDIX E?	✓	—	
6.8.1.3 EPA/600/R/93/116?	✓	—	
6.8.1.4 Other? (explain)	✓	—	California CARB 435.
6.8.2 Are samples examined for homogeneity?	✓	—	
6.8.3 If necessary, are samples mixed to make them homogeneous?	✓	—	
6.8.4 If layers are observed, are they analyzed separately?	✓	—	
6.8.5 Which of the following preparation procedures are used:			
6.8.5.1 Are samples cut into small pieces or layers?	✓	—	
6.8.5.2 Are samples ashed?	✓	—	
6.8.5.3 Are samples ground in a mortar?	—	✓	
6.8.5.4 Are samples acid washed?	✓	—	
6.8.5.5 Are samples treated with sodium metaphosphate?	—	✓	
6.8.5.6 Other treatment? (Described technique)	—	✓	
6.8.6 Are sample preparation processes easily understood?	—	✓	
6.8.7 Are glass slides and cover slips cleaned prior to use, and stored in an environment free of dust and fibers?	—	✓	See additional comments below.
6.8.8 Are written SOPs available for sample preparation procedures?	—	✓	
6.8.9 Are written SOPs procedures followed by laboratory personnel?	✓	—	

Additional Comments:

Cover slips and slides were stored on the work bench outside of the HEPA hood. The slides and cover slips were left uncovered, and there was noticeable dust and ceiling debris on the floors.

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7.0 ASBESTOS ANALYSIS	Yes	No	Comments
7.1 Analysis of Bulk Samples by PLM:			
7.1.1 Which of the following methods are used by the laboratory for analysis by PLM:			
7.1.1.1 NIOSH 9002?	✓	—	
7.1.1.2 40CFR, PART 763, SUBPART E, APPENDIX E?	✓	—	
7.1.1.3 EPA/600/R/93/116?	✓	—	
7.1.1.4 Other? (explain)	✓	—	California CARB 435.
7.1.2 Verify that the laboratory has the following equipment:			
7.1.2.1 A stereomicroscope (ca.10X to 45X) with an incandescent or fluorescent light source?	✓	—	
7.1.2.2 A polarized light microscope equipped with the following:			
7.1.2.2.1 A polarizer?	✓	—	
7.1.2.2.2 A port for a retardation plate?	✓	—	
7.1.2.2.3 A 360 degree graduated rotating stage?	✓	—	
7.1.2.2.4 A substage condenser with iris?	✓	—	
7.1.2.2.5 A lamp with lamp iris?	✓	—	
7.1.2.2.6 An objective lens (10X-40X)?	✓	—	
7.1.2.2.7 An ocular lense (minimum 10X)?	✓	—	
7.1.2.2.8 A dispersion staining objective lens or equivalent?	—	✓	PLM instrument PL-1 does not, but
7.1.2.2.9 A compensator plate (ca.550 nm ±20 nm)?	✓	—	PLM instrument PL-3 does.
7.1.2.2.10 Retardation "first order red" compensator?	✓	—	
7.1.2.3 What is the range of magnification? (Typically 100-400X with 10-40X stereo magnification)	✓	—	The range of magnification is > 100X.
7.1.3 Determine which of the following techniques are used for qualitative identification:			
7.1.3.1 Refractive indices in various refractive index liquids?	✓	—	
7.1.3.2 Dispersion staining characteristics?	—	✓	Not for PLM instrument PL-1.
7.1.3.3 Red compensator plates in conjunction with polarized light?	✓	—	
7.1.3.4 Color?	✓	—	
7.1.3.5 Stereo microscopy to determine which refractive index oil to utilize?	✓	—	
7.1.3.6 Pleochroism?	✓	—	
7.1.3.7 Birefringence?	✓	—	
7.1.3.8 Extinction characteristics?	✓	—	
7.1.3.9 Sign of elongation?	✓	—	

Additional comments:

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Date of On-site: April 9-10, 2001

7.0 ASBESTOS ANALYSIS (continued)	Yes	No	Comments
7.1 Analysis of Bulk Samples by PLM (continued):			
7.1.4 Are the following characteristics described during stereomicroscopic analysis:			
7.1.4.1 Morphology?	✓	—	The optical properties were often not documented in the raw data and/or reported to the client.
7.1.4.2 Homogeneity?	✓	—	
7.1.4.3 Texture?	✓	—	
7.1.4.4 Friability?	✓	—	
7.1.4.5 Color?	✓	—	
7.1.4.6 Extent of fibrous components?	✓	—	
7.1.4.7 Were subsamples prepared for additional samples?	✓	—	
7.1.5 Calibration and Quality Control:			
7.1.5.1 Are daily contamination checks of slides, slip covers, and refractive index liquids performed and the results recorded?	✓	—	
7.1.5.2 Are daily PLM calibrations documented?	✓	—	
7.1.5.3 Are microscope maintenance activities documented?	—	✓	
7.1.5.4 Verify that the refractive index checks for all liquids used are performed and recorded weekly.	—	✓	Refractive index checks performed monthly.
7.1.5.5 Verify the laboratory examined at least three preparations for samples and blank in which no asbestos was detected.	—	✓	Only two slide mounts were prepared for each sample.
7.1.5.6 Is asbestos concentration in % determined by comparison with standards and are records maintained of these comparisons?	✓	—	
7.1.5.7 Are duplicate slides made for at least 10% of the samples?	—	✓	
7.1.5.8 Are duplicate results averaged?	—	✓	
7.1.5.9 Are additional slides prepared when results of duplicates vary widely?	—	—	Could not determine because no such results were available.
7.1.5.10 Do records show that analysts are periodically proficiency tested for qualitative and quantitative asbestos analysis?	—	✓	See additional comments below.

Additional comments:

The training records and proficiency results for individual analysts were either unavailable or incomplete.

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7.0 ASBESTOS ANALYSIS (continued)	Yes	No	Comments
7.1 Analysis of Bulk Samples by PLM (continued):			
7.1.6 Qualitative Assessment:			
7.1.6.1 Are qualitative procedures to determine asbestos type described in the PLM asbestos analysis SOP?	✔	—	
7.1.6.2 Are slides scanned for Asbestos Fibers?	✔	—	
7.1.6.2.1 What RI liquid is used? (1.550 required)	✔	—	
7.1.6.2.2 How many preparations are scanned after the first scan shows no fibers? (Two additional preparations required)	-	-	At least one (1).
7.1.6.2.3 If the scan showed fibers but no asbestos was reported, verify that the documentation shows that the sample was isotropic (fibers disappear at all angles) in the polarized light. (Review documentation)	—	✔	Not documented.
7.1.6.3 Identification of Tremolite-actinolite Asbestos:			
7.1.6.3.1 What RI liquid is used? (1.550 required)	✔	—	
7.1.6.3.2 What characteristics are used to identify tremolite-actinolite? (angle of extinction with red compensator consistent with actinolite negative sign of elongation)	✔	—	
7.1.6.4 Identification of Chrysotile:			
7.1.6.4.1 What RI liquid is used? (1.550 required)	✔	—	
7.1.6.4.2 What characteristics are used to identify chrysotile? (dispersion staining shows blue and blue magenta).	✔	—	
7.1.6.4.3 Has cellulose interference been eliminated?	✔	—	
7.1.6.5 Identification of Crocidolite:			
7.1.6.5.1 What RI liquid is used? (1.700 required)	✔	—	
7.1.6.5.2 What characteristics are used to identify crocidolite? (straight fibers, blue-blue purple in color, pleochroic colors [blue or gray], and staining colors of red)	✔	—	

Additional comments:

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7.0 ASBESTOS ANALYSIS (continued)	Yes	No	Comments
7.1 Analysis of Bulk Samples by PLM (continued):			
7.1.6.6 Identification of Amosite:			
7.1.6.6.1 What RI liquid is used? (1.680 required)	✓	—	
7.1.6.6.2 What characteristics are used to identify amosite? (straight fibers, broom-like or splayed bundles, and blue-pale blue colors indicating cummingtonite, or gold and blue indicating grunerite. Dispersion staining of blue and gold)	✓	—	
7.1.6.7 Identification of Anthophyllite-tremolite-actinolite:			
7.1.6.7.1 What RI liquid is used? (1.605 required)	✓	—	
7.1.6.7.2 What characteristics are used to identify Anthophyllite-tremolite-actinolite? (near disappearance of parallel extinction, light to dark green, pleochroism, and blue and yellow central stop colors [anthophyllite])	✓	—	
7.1.6.7.3 Was wollastonite interference checked?	✓	—	
7.1.7 Quantitative Assessment:			
7.1.7.1 Are quantitative procedures used to determine the amount of asbestos consistent with those described in the SOP?	✓	—	
7.1.7.2 Does the quantitative method used involve filter comparisons to:			
7.1.7.2.1 Standard projections?	—	—	Not asked.
7.1.7.2.2 Photos?	—	—	Not asked.
7.1.7.2.3 Drawings?	—	—	Not asked.
7.1.7.3 Are all descriptions recorded?	—	✓	
7.1.7.4 Are all concentration estimates recorded?	✓	—	
7.1.7.5 To what concentration range does the laboratory report using the PLM technique? (1-100%)	✓	—	
7.1.7.6 Does the laboratory maintain proficiency documentation for all analysts?	—	✓	See additional comments below.
7.1.7.7 Do records show consistency of analysts estimates? (examine records)	—	✓	See additional comments below.

Additional comments:

All proficiency documentation is maintained off-site by the QAO who is located at the corporate office.

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7.0 ASBESTOS ANALYSIS (continued)	Yes	No	Comments
7.2 Asbestos Analysis by TEM:			
7.2.1 Which of the following methods are used by the laboratory for analysis by TEM:			
7.2.1.1 EPA/540/R/97/028?	—	—	Not audited.
7.2.1.2 NIOSH Method 7402?	—	—	Not audited.
7.2.1.3 40CFR, PART 763, SUBPART E, APPENDIX A?	—	—	Not audited.
7.2.1.4 Other?(explain)	—	—	Not audited.
7.2.2 Is the TEM capable of being operated at between 80 and 120 kV?	—	—	Not audited.
7.2.3 Does the TEM have electron diffraction and energy dispersive X-ray capabilities?	—	—	Not audited.
7.2.3.1 Does the TEM have a fluorescent screen with an inscribed or overlaid calibrated scale?	—	—	Not audited.
7.2.4 Instrument Calibration:			
7.2.4.1 Is the camera length of the TEM in electron diffraction mode calibrated before electronic diffraction patterns of unknown samples are observed?	—	—	Not audited.
7.2.4.2 Is TEM magnification calibration conducted, and recorded, at the appropriate intervals?	—	—	Not audited.
7.2.4.3 Is a field of view defined, either by markings or physical boundaries?	—	—	Not audited.
7.2.4.4 Are the grating lines lined up using a diffraction grating replica?	—	—	Not audited.
7.2.4.5 Is the graticule field area calculated to determine an average grid opening?	—	—	Not audited.
7.2.4.6 Are reference materials used to obtain photographs of diffraction patterns for comparison to unknowns?	—	—	Not audited.
7.2.4.7 Are energy-dispersive X-ray (EDX) spectra on approximately five fibers obtained from standard reference materials?	—	—	Not audited.
7.2.5 Measurement:			
7.2.5.1 Is a diffraction pattern inspection performed on all sample fibers counted under TEM?	—	—	Not audited.

Comments:

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7.0 ASBESTOS ANALYSIS (continued)	Yes	No	Comments
7.2 Asbestos Analysis by TEM (continued):			
7.2.5.2 Is the diffraction pattern assigned to one of the following structures:			
7.2.5.2.1 Chrysotile?	—	—	Not audited.
7.2.5.2.2 Amphibole?	—	—	Not audited.
7.2.5.2.3 Ambiguous?	—	—	Not audited.
7.2.6 Are energy-dispersive X-ray spectra obtained from fibers on field samples using diffraction inspection?	—	—	Not audited.
7.2.7 Using the diffraction pattern and energy-dispersive X-ray spectrum, are fibers classified accordingly?			
7.2.7.1 Chrysotile - Are energy-dispersive X-ray spectra obtained for the first five fibers, and one out of ten thereafter:	—	—	Not audited.
7.2.7.1.1 Are fibers with range profiles 0-5-10-0-0 to 0-10-10-0-0 classified as "chrysotile"?	—	—	Not audited.
7.2.7.2 Amphibole - Are energy-dispersive X-ray spectra obtained for the first ten fibers, and one out of ten thereafter:	—	—	Not audited.
7.2.7.2.1 Are fibers with range profile 0-2-10-0-7 classified as "possible amosite?"	—	—	Not audited.
7.2.7.2.2 Are fibers with range profile 1-1-10-0-6 classified as "possible crocidolite?"	—	—	Not audited.
7.2.7.2.3 Are fibers with range profile 0-4-10-3-<1 classified as "possible tremolite?"	—	—	Not audited.
7.2.7.2.4 Are fibers with range profile 0-3-10-0-1 classified as "possible anthophyllite?"	—	—	Not audited.
7.2.8 Are individual grid openings with greater than 5% openings, covered with greater than 25% particulate matter, or obviously having nonuniform loading, ignored?	—	—	Not audited.
7.2.9 Are grids rejected if:			
7.2.9.1 Less than 50% of the grid openings covered by the replica are intact?	—	—	Not audited.
7.2.9.2 The replica is doubled or folded?	—	—	Not audited.
7.2.9.3 The replica is too dark because of incomplete dissolution of the filter?	—	—	Not audited.

Comments:

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7.0 ASBESTOS ANALYSIS (continued)	Yes	No	Comments
7.2 Asbestos Analysis by TEM (continued):			
7.2.10 Counting and Sizing:			
7.2.10.1 Are the following rules applied when determining which grid openings to count:			
7.2.10.1.1 For light loading (<5 fibers/grid opening) count total of 40 grid openings?	—	—	Not audited.
7.2.10.1.2 For moderate loading (5 to 25 fibers/grid opening) count minimum of 40 grid openings?	—	—	Not audited.
7.2.10.1.3 For heavy loading (>25 fibers/grid opening) count a minimum of 100 fibers and at least 6 grid openings?	—	—	Not audited.
7.2.11 Are at least two field blanks counted per sample set?	—	—	Not audited.
7.2.12 Are the following rules applied when counting fibers:			
7.2.12.1 Are all particles with a diameter greater than 0.25μm that meet the definition of a fiber (Longer than 5μ, aspect ration ≥3:1) counted?	—	—	Not audited.
7.2.12.2 Fibers which are partially obscured by the grid are counted as half fibers?	—	—	Not audited.
7.2.12.3 Each fiber is sized while it is counted, and the length and diameter recorded?	—	—	Not audited.
7.2.13 Calculations and Reporting:			
7.2.13.1 Is the Z-test performed?	—	—	Not audited.
7.2.13.2 Are the fractions of optically visible asbestos fibers calculated and reported?	—	—	Not audited.
7.2.13.3 Is the following information reported for each sample analyzed:			
7.2.13.3.1 Concentration in structures per square millimeter and structures per cubic centimeter?	—	—	Not audited.
7.2.13.3.2 Analytical sensitivity used for the analysis?	—	—	Not audited.
7.2.13.3.3 Number of asbestos structures?	—	—	Not audited.
7.2.13.3.4 Area analyzed?	—	—	Not audited.
7.2.13.3.5 Volume of air sampled?	—	—	Not audited.
7.2.13.3.6 Copy of the count sheet?	—	—	Not audited.
7.2.13.3.7 Type of asbestos?	—	—	Not audited.
7.2.13.3.8 Model and manufacturer of the TEM and energy-dispersive X-ray system reported?	—	—	Not audited.
7.2.13.3.9 Signature of laboratory representative?	—	—	Not audited.

Additional comments:

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7.0 ASBESTOS ANALYSIS (continued)	Yes	No	Comments
7.3 Asbestos Preparation and Analysis by PCM:			
7.3.1 Does the laboratory follow the procedures in NIOSH Method 7400?	—	—	Not audited.
7.3.2 If not, what method is used?	—	—	Not audited.
7.3.3 Equipment:			
7.3.3.1 Is the microscope used to analyze samples equipped with the following:			
7.3.3.1.1 Positive phase (dark) contrast, with green or blue filter?	—	—	Not audited.
7.3.3.1.2 Adjustable field iris?	—	—	Not audited.
7.3.3.1.3 Eyepiece (8 to 10X)?	—	—	Not audited.
7.3.3.1.4 Phase magnification (40 to 45X)?	—	—	Not audited.
7.3.3.1.5 Walton-Beckett Graticule, type G-22 with 100 μm diameter circular field?	—	—	Not audited.
7.3.3.1.6 Stage micrometer with 0.01 mm subdivisions?	—	—	Not audited.
7.3.4 Sample Preparation:			
7.3.4.1 Are glass slides and cover slips cleaned prior to use, and stored in an environment free of dust and fibers?	—	—	Not audited.
7.3.4.2 Is the aluminum "hot block" used in a fume hood or isolated from surfaces susceptible to heat damage?	—	—	Not audited.
7.3.4.3 Are filter wedges cut using a curved-blade surgical steel knife?	—	—	Not audited
7.3.4.4 Are filter preparation slides stored in fiber/dust free environment?	—	—	Not audited.
7.3.4.5 Are written SOPs available for filter preparation for PCM analysis?	—	—	Not audited.
7.3.4.6 Are SOPs procedures followed by laboratory personnel?	—	—	Not audited.
7.3.5 Filter Analysis:			
7.3.5.1 Are intra- and inter-counter relative standard deviations calculated from blind repeat counts for each sample matrix analyzed?	—	—	Not audited.

Additional comments:

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7.0 ASBESTOS ANALYSIS (continued)	Yes	No	Comments
7.3 Asbestos Preparation and Analysis by PCM (continued):			
7.3.5.2 Have these relative standard deviations been calculated for each of the following fiber density ranges:			
7.3.5.2.1 5 to 20 fibers in 100 fields?	—	—	Not audited.
7.3.5.2.2 >20 to 50 fibers in 100 fields?	—	—	Not audited.
7.3.5.2.3 >50 to 100 fibers in 100 fields?	—	—	Not audited.
7.3.5.2.4 100 fibers in less than 100 fields?	—	—	Not audited.
7.3.5.3 Are control charts maintained for this data?	—	—	Not audited.
7.3.5.4 Are the following counting rules used:			
7.3.5.4.1 Count only fibers longer than 5 μm (length of curved fibers is to be performed along the curve)?	—	—	Not audited.
7.3.5.4.2 Count only fibers with a length-to-width ratio equal to or greater than 3:1?	—	—	Not audited.
7.3.5.4.3 Fibers which meet the above rules, but cross graticule field, are to be counted as ½ fiber?	—	—	Not audited.
7.3.5.4.4 Fibers which cross the graticule boundaries more than once are not counted?	—	—	Not audited.
7.3.5.4.5 Bundles of fibers are to be counted as 1 fiber, unless individual fibers can be identified by observing both ends?	—	—	Not audited.
7.3.5.4.6 Count enough graticule fields to yield 100 fibers?	—	—	Not audited.
7.3.5.4.7 Count a minimum 20 graticule fields?	—	—	Not audited.
7.3.5.4.8 Stop at 100 graticule fields regardless of the count?	—	—	Not audited.
7.3.5.4.9 How are the fields and fibers tracked? (counter or paper grid)	—	—	Not audited.
7.3.5.5 What is the frequency of recount analyses?	—	—	Not audited.
7.3.5.6 Are recounts performed and analyzed prior to the release of results?	—	—	Not audited.
7.3.5.7 Are recounts performed by the same analysts on the same microscope?	—	—	Not audited.
7.3.5.8 What procedure is used for performing blind recounts?	—	—	Not audited.
7.3.5.9 What is the accept/reject criteria for recount data?	—	—	Not audited.
7.3.6 Are written SOPs available for filter analysis by PCM?	—	—	Not audited.
7.3.7 Are SOP procedures followed by laboratory personnel?	—	—	Not audited.

Additional comments:

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7.0 ASBESTOS ANALYSIS (continued)	Yes	No	Comments
7.3 Asbestos Preparation and Analysis by PCM (continued):			
7.3.8 Reporting:			
7.3.8.1 What criteria are utilized to report samples as overloaded?	—	—	Not audited.
7.3.8.2 What are the procedures used for calculating the limit of detection for each sample?	—	—	Not audited.
7.3.8.3 How does the laboratory report samples with fiber densities above 1300 fibers/mm^2?	—	—	Not audited.
7.3.8.4 Does each laboratory report issued contain the following:			
7.3.8.4.1 Name of laboratory?	—	—	Not audited.
7.3.8.4.2 Date of analysis?	—	—	Not audited.
7.3.8.4.3 Method number?	—	—	Not audited.
7.3.8.4.4 Signature of analyst?	—	—	Not audited.
7.3.8.4.5 Fibers counted?	—	—	Not audited.
7.3.8.4.6 Fields counted?	—	—	Not audited.
7.3.8.4.7 Sample volume?	—	—	Not audited.
7.3.8.4.8 Intra- and interlaboratory relative standard deviation?	—	—	Not audited.
7.4 Asbestos Sample Preparation and Analysis by XRD (Chrysotile):			
7.4.1 Which of the following methods are used by the laboratory for sample preparation and analysis for XRD:			
7.4.1.1 EPA/600/R/93/116?	—	—	Not audited.
7.4.1.2 40CFR, PART 763, SUBPART E, APPENDIX E?	—	—	Not audited.
7.4.1.3 NIOSH Method 9000?	—	—	Not audited.
7.4.1.4 Other, explain?	—	—	Not audited.
7.4.2 Is an SOP available for sample preparation and analysis of chrysotile?	—	—	Not audited.
7.4.3 Do laboratory personnel follow the SOP?	—	—	Not audited.

Additional comments:

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7.0 ASBESTOS ANALYSIS (continued)	Yes	No	Comments
7.4 Asbestos Sample Preparation and Analysis by XRD (continued):			
7.4.4 Sample Preparation:			
7.4.4.1 Is the balance used capable of measuring to 0.01 mg?	—	—	Not audited.
7.4.4.2 Is approximately 500 mg sample weighed, recorded, and ground in a liquid nitrogen cooled mill?	—	—	Not audited.
7.4.4.3 Is the ground sample then washed, recovered on a non-fibrous polycarbonate filter, and dried at 110°C for 4 hours?	—	—	Not audited.
7.4.4.4 Is approximately 5 mg of the sieved sample transferred onto a silver filter for the final preparation?	—	—	Not audited.
7.4.4.5 Is the prepared sample stored in a dust/fiber free environment?	—	—	Not audited.
7.4.4.6 Are sample preparation records or logbooks maintained? (Evaluate the sample preparation documentation)	—	—	Not audited.
7.4.5 Standards Preparation:			
7.4.5.1 What is the source of the calibration and verification standards?	—	—	Not audited.
7.4.5.2 Are working standard filters prepared in triplicate?	—	—	Not audited.
7.4.6 Are standards preparation records or logbooks maintained? (Evaluate the standards preparation documentation)	—	—	Not audited.
7.4.7 Analysis of Asbestos Standards and Samples:			
7.4.7.1 Are historical calibration graphs of normalized XRD intensities versus μg of each standard maintained?	—	—	Not audited.
7.4.7.2 Evaluate the logbooks for calibration acceptance criteria. (The intercept should be within ±5 μg of zero)	—	—	Not audited.
7.4.7.3 Ask the laboratory to demonstrate the technique for pipetting the suspensions onto the filters during initial calibration.	—	—	Not audited.
7.4.7.4 Does the laboratory retain media blank analysis results used to determine the net normalized counts for the silver peak?	—	—	Not audited.

Additional comments:

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7.0 ASBESTOS ANALYSIS (continued)	Yes	No	Comments
7.4 Asbestos Sample Preparation and Analysis by XRD (continued):			
7.4.7.5 Verify that the qualitative scans encompass the range that includes XRD peaks for Chrysotile and silver (peaks at 2-theta degrees Chrysotile = 12.08 and 24.38; silver = 38.12 and 44.38).	—	—	Not audited.
7.4.7.6 Ask the laboratory to demonstrate the procedure for establishing the intensity and normalization scale factors.	—	—	Not audited.
7.4.7.7 Verify scan times are 15 minutes.	—	—	Not audited.
7.4.7.8 Verify procedures for obtaining background is in accordance with the method.	—	—	Not audited.
7.4.7.9 Verify that the formula used for normalized intensity (I_x) for the sample peaks on each sample is the following: $I_x = (I_x/I_r)*N$	—	—	Not audited.
7.4.7.10 Verify that the formula for calculating the percentage of Chrysotile is as described in the method.	—	—	Not audited.

Additional comments:

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8.0 ELECTRONIC DATA STORAGE	Yes	No	Comments
8.1 Are all raw data, including output files archived on a suitable electronic storage device?	_	_	Not audited.
8.2 Is a logbook of electronically archived data maintained?	_	_	Not audited.
9.0 DATA HANDLING AND REVIEW			
9.1 Are data calculations reviewed by a second person?	_	✔	Peer review is performed infrequently.
9.2 Do records indicate appropriate corrective action is taken when QC criteria are not achieved?	_	✔	
9.3 Do supervisory personnel review the data and QC results prior to submission?	_	✔	Supervisory review is performed infrequently.
9.4 Are SOPs for data reduction procedures readily available and followed by laboratory personnel?	_	✔	
9.5 Are hardcopy and electronic deliverables checked for completeness and accuracy?	_	_	Not applicable.
9.5.1 Are resubmittals checked?	_	_	Not audited.
9.6 Are data and file access user ID or file password-protected?	✔	_	
9.7 Are SOPs for data management and handling readily available and followed by laboratory personnel?	_	✔	
9.8 Are changes to reports (if required) properly documented?	_	✔	
9.9 Are user manuals for operating systems available?	_	_	Not audited.
9.10 Electronic Data Transfer			
9.10.1 Is data transferred electronically within the laboratory?	_	✔	
9.10.2 If yes, are SOPs for data transfer readily available and followed by lab personnel?	_	_	Not applicable.
9.10.3 Is the following information recorded:			
9.10.3.1 Person responsible for electronic data transfer?	_	_	Not applicable.
9.10.3.2 Date of electronic data transfer?	_	_	Not applicable.
9.10.3.3 Person to whom electronic transfer was made?	_	_	Not applicable.
9.10.3.4 Status of the data (e.g., draft, final, etc.)?	_	_	Not applicable.
9.10.3.5 Numerical identifier assigned to data transfer?	_	_	Not applicable.

Additional comments:

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10.0	COMPUTER-RESIDENT SAMPLE DATA CONTROL	Yes	No	Comments
10.1	Is the electronic data entry system located in a secure area?	—	—	Not audited.
10.2	Is the system secured by limiting access to authorized personnel only?	—	—	Not audited.
10.3	Is the electronic system protected from the introduction of external software in order to guard against viruses?	—	—	Not audited.
10.4	Are personnel responsible for original data entry identified at the time of data input?	✓	—	
10.5	Are documents produced by the electronic system verified for accuracy on a routine basis?	✓	—	
10.6	Is each of the following subject to routine verification for accuracy:			
10.6.1	Electronically entered data?	—	—	Not audited.
10.6.2	Manually entered data?	—	—	Not audited.
10.6.3	Data acquired from instruments?	—	—	Not audited.
10.7	Is a system in place to ensure that original data are preserved in the event that revisions are required?	✓	—	
10.7.1	Is the name of the editor identified at the time of revision?	✓	—	
10.7.2	Is the revision date recorded?	✓	—	
10.8	Is there a designated archive storage area for electronic data and software?	—	—	Not audited.
10.9	Is the archive storage area adequate and secure with access limited to authorized personnel only?	—	—	Not audited.
10.10	Can the laboratory produce a diskette deliverable?	—	—	Not applicable.
	Software Vendor:_____			
10.11	Does the laboratory have technical support available to modify the diskette deliverable software to conform to contract specifications?	—	—	Not applicable.
	Technical Support: _____			

Additional comments:

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11.0	CONFIDENTIAL INFORMATION	Yes	No	Comments
11.1	If the laboratory receives confidential information or documents, is a system in place to maintain their confidentiality, including data generated on samples associated with such information?	✓	—	
12.0	**DATA PACKAGE ORGANIZATION AND ASSEMBLY**			
12.1	Is there a document control officer (DCO) and a designated alternate responsible for data package organization and assembly?	✓	—	
	DCO's name: Scosha Brewer			
	Alternate's name: Michelle Edward			
12.2	Are SOPs for data package assembly procedures readily available and followed by laboratory personnel?	—	✓	
12.3	Are documents relating to the data package assembly kept in a secure location?	—	✓	
12.4	Are original laboratory forms and copies of deliverable related logbook pages included in the data package?	✓	—	
12.5	Are complete and legible photocopies of laboratory documents maintained?	✓	—	
12.6	Does the DCO or alternate verify that the data packages are complete and accurate before shipment?	✓	—	
12.7	Is the shipment of each data package documented?	—	—	Not audited.
12.7.1	Does documentation include:			
12.7.1.1	Contents?	—	—	Not audited.
12.7.1.2	To whom?	—	—	Not audited.
12.7.1.3	Date out?	—	—	Not audited.
12.7.1.4	Carrier used?	—	—	Not audited.
12.8	Does the DCO use custody seals to secure each data package?	—	✓	
12.9	Are custody seals:			
12.9.1	Signed?	—	—	Not applicable.
12.9.2	Dated?	—	—	Not applicable.
12.9.3	Properly placed on the package so that opening the package breaks the seal?	—	—	Not applicable.

Additional comments:

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13.0 QUALITY ASSURANCE INTERNAL INSPECTIONS	Yes	No	Comments
13.1 Does the contractor follow an internal QA inspection procedure?	✓	—	Semiannual internal audits are performed by the QAO.
13.2 Are SOPs for data validation/self inspection readily available and followed by laboratory personnel?	—	✓	
13.3 Have all analysts received proper training? What courses have they attended?	—	—	See additional comments below.
13.4 Do individual analysts participate in the AIHA Asbestos Analyst Registry (AAR) Program?	—	—	See additional comments below.
13.5 If yes, list the names of the analysts:			
Name / AAR Number / Training Description			
_____ / _____ / _____			
_____ / _____ / _____			
_____ / _____ / _____			
13.5.1 If no, do analysts participate in some other registry program?	—	—	See additional comments below.
13.6 Are analysts given NIOSH 582 training:			
13.6.1 NIOSH 582?	—	—	See additional comments below.
13.6.2 McCrone PLM training?	—	—	See additional comments below.
13.6.3 McCrone TEM training?	—	—	See additional comments below.
13.6.4 Other? (List)	—	—	See additional comments below.
13.7 Is there a program to routinely test analysts proficiency?	—	—	See additional comments below.
13.8 What kinds of QA records are kept?			
13.8.1 Proficiency/training results?	✓	—	
13.8.2 Records of reference material results?	✓	—	
13.8.3 Method detection limits?	✓	—	
13.8.4 Control charts?	✓	—	
13.8.5 Results from round robin and PE studies with other laboratories? (If yes, get a copy of results)	✓	—	
13.9 Can the contractor demonstrate, through QA records and reports, the sequence of problem identification, corrective action and resumption of duties?	—	✓	See additional comments below.

Additional comments: All training and QA/QC records were maintained by the QAO, located at the corporate office. During the laboratory evaluation, the auditors requested that training and QA/QC be faxed to the laboratory for review. Although documentation was received, training records were incomplete.

QA records did not demonstrate the sequence of problems and/or corrective actions taken. The QAO indicated that such discrepancies are handled by telephone and often not recorded.

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13.0 QUALITY ASSURANCE INTERNAL INSPECTIONS (continued)	Yes	No	Comments
13.10 Does the QA Officer maintain records of laboratory performance, such as precision and accuracy charts of laboratory personnel?	✓	—	
13.10.1 Does the QA plan contain the following sections:			
13.10.1.1 Sample acceptance testing?	✓	—	
13.10.1.2 Sample receipt, log-in, chain-of-custody, holding, and handling?	✓	—	
13.10.1.3 Microscope setup, calibration, and routine checks?	✓	—	
13.10.1.4 Sample preparation and analysis?	✓	—	
13.10.1.5 Intra-laboratory checks?	✓	—	
13.10.1.6 Inter-laboratory checks?	✓	—	
13.10.1.7 Calculations?	✓	—	
13.10.1.8 Data validation?	✓	—	
13.10.1.9 Reporting?	✓	—	
13.10.2 Does the QA plan require the following:			
13.10.2.1 The laboratory to maintain slides with various fiber loadings?	✓	—	
13.10.2.2 The laboratory to maintain slides containing SRM standards?	✓	—	
13.10.2.3 The laboratory to frequently analyze reference materials?	✓	—	
13.10.2.4 The laboratory to record results of the analysis of reference standards?	✓	—	
13.10.2.5 The analyst to meet technical acceptance criteria?	✓	—	
13.10.2.6 Corrective action when criteria are not met?	✓	—	
14.0 DOCUMENT AND LOGBOOK REVIEW			
14.1 Document Review Checklist			
14.1.1 Does the laboratory name appear on all pre-printed documents?	—	✓	
14.1.2 Does the title of the associated activity appear on each pre-printed page?	—	✓	
14.1.3 Is each column labeled with a column heading?	✓	—	
14.1.4 Are all entries made in indelible ink?	✓	—	
14.1.5 Is each entry signed (or initialed) and fully dated (mm/dd/yy) by the individual(s) responsible for performing and recording the activity?	—	✓	
14.1.6 Are all corrections signed (or initialed), dated and made by drawing a single line through original entry?	—	✓	
14.1.7 Are unused sections of pages lined-out?	—	✓	
14.1.8 Do documents provide a complete and accurate record of all activities observed by evaluator?	—	✓	
14.1.9 Is there evidence of a secondary review of all documents by someone other than the person making the original entry?	—	✓	

Additional comments:

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14.0 DOCUMENT AND LOGBOOK REVIEW (continued)	Yes	No	Comments
14.2 Logbook Protocol Checklist			
14.2.1 Are logbook pages sequentially numbered?	✓	—	
14.2.2 Is each column labeled with a column heading?	—	✓	
14.2.3 Are logbook entries made in indelible ink?	✓	—	
14.2.4 Do logbook entries include one deliverable only per page?	—	✓	
14.2.5 Are logbook entries in chronological order?	✓	—	
14.2.6 Are all corrections signed (or initialed), dated, and made by drawing a single line through original entry?	—	✓	
14.2.7 Are page inserts (if any) permanently affixed, signed and dated?	✓	—	
14.2.8 Are records of failed runs maintained?	—	—	Not applicable.
14.2.9 Are unused sections of pages lined-out?	—	✓	
14.2.10 Are instrument-specific run logs maintained with adequate information to reconstruct the run sequence on each instrument?	—	—	Not applicable.
14.2.11 Is there evidence of a secondary review of all logbooks by someone other than the person making the original entry?	—	✓	

Additional comments: